Application No. 10/025,556
Amendment dated June 6, 2005
Page 3

In the Abstract

Please replace the abstract with the following amended abstract. A clean copy of the amended abstract is provided on a separate sheet as required.

~~The present invention relates to parallel loop transformation methods for race detection during an execution of parallel programs which is one of the debugging methods for parallel loop programs. Using the information obtained from a static analysis of parallel loop bodies, the monitoring time for race detection is improved by transforming the loop bodies in order for only the necessary iterations for race detection can be dynamically selected during the execution. Specifically, in comparison to the conventional monitoring methods which typically consumes a long time since they monitor the full iterations for each parallel loop in parallel loop programs, by monitoring two times of the execution paths irrespective of the parallelism of each parallel loop, the present invention can significantly reduce the execution time. As a result, the present invention allows a convenient race detection of parallel loop programs therefore making the race detection more practical.~~ A parallel loop transformation method for race detection during an execution of parallel programs that includes generating a data structure of a condition statement branch determinant string Cstr required for loop transformation by taking an original parallel loop as an input and extracting execution path information, transforming the original parallel loop into a full race covering loop using the data structure of the condition statement branch determinant string Cstr required for loop transformation and the execution path information as an input statement, instrumenting the race detection function in order to activate the race detection function for the transformed parallel loop which are previously generated, and executing the race detection while running the parallel programs according to instrumented detection functions.